ABSTRAK

PENGARUH PENAMBAHAN NANOSELULOSA SERAT KULIT DURIAN (*Durio zibethinus Murr*) TERHADAP KEKASARAN PERMUKAAN PLAT ORTODONTI RESIN AKRILIK *SELF CURE* METODE *SPRAY-ON*

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Penggunaan nanoselulosa serat kulit durian dalam bidang kedokteran gigi sudah pernah dimanfaatkan, salah satunya sebagai bahan penguat resin akrilik *self cure* untuk meningkatkan kekuatan fleksural. Kandungan nanoselulosa serat kulit durian dapat meningkatkan kekuatan fleksural resin akrilik *self cure* dengan metode *spray-on*, tetapi pengaruh penambahan nanoselulosa serat kulit durian terhadap kekasaran permukaan resin akrilik *self cure* metode *spray-on* belum pernah diteliti. Tujuan dari penelitian ini untuk mengetahui pengaruh penambahan nanoselulosa serat kulit durian (Durio zibethinus Murr) terhadap kekasaran permukaan plat ortodonti resin akrilik *self cure* dengan metode *spray-on*. Jenis penelitian yang akan dillakukan pada penelitian ini adalah penelitian eksperimental laboratoris menggunakan rancangan *post-test only control group design*. Jumlah sampel sebanyak 45 dipilih menggunakan *simple random sampling* kemudian dibagi menjadi 5 kelompok, yaitu resin akrilik *self cure* dengan penambahan nanoselulosa serat kulit durian sebanyak 0,25%, 0,50%, 0,75%, 1%, dan kelompok tanpa penambahan nanoselulosa serat kulit durian. Uji TEM dilakukan pada nanoselulosa sebanyak 0,5 ml untuk melihat ukuran dan bentuk nanoselulosa. Uji SEM dilakukan pada sampel yang dipilih secara *simple random sampling*. Uji kekasaran permukaan dilakukan menggunakan alat *surface roughness tester* Surfcorder SE 1700. Analisis data menggunakan *One-Way ANOVA* kemudian uji LSD. Hasil pada penelitian ini nanoselulosa berbentuk *whisker* dengan rerata panjang 181 nm dan lebar 16,5 nm. Kekasaran permukaan paling tinggi terdapat pada kelompok perlakuan 4 dengan penambahan nanoselulosa sebesar 1% sebesar 2,2954 ± 0,3417 µm dan yang paling rendah pada kelompok kontrol sebesar 1,2409 ± 0,3352 µm**.** Berdasarkan hasil diatas dapat dikatakan terdapat pengaruh penambahan nanoselulosa serat kulit durian (*Durio zibethinus* Murr.) terhadap kekasaran permukaan resin akrilik *self cure*.

Kata kunci: Kekasaran permukaan, kulit durian, nanoselulosa, plat akrilik ortodonti, resin akrilik *self cure*,
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ABSTRACT

THE EFFECT OF DURIAN RIND (Durio zibethinus Murr.) NANOCELLULOSE ADDITIONAL ON SURFACE ROUGHNESS OF SELF CURE ACRYLIC RESIN BASE PLATE ORTHODONTIC SPRAY-ON METHOD

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The use of durian rind nanocellulose in dentistry has been used as a self curing acrylic reinforment material to increase flexural strength. The nanocellulose content of durian rind fiber can increase the flexural strength of self-curing acrylic resin by a spray-on method. However, the spray-on method has not studied the effect of adding nanocellulose from durian rind to the surface roughness of self-curing acrylic resin. The purpose of this study was to determine the effect of the addition of durian rind nanocellulose (Durio zibethinus Murr) on the surface roughness of self-curing acrylic resin orthodontic plates using the spray-on method. The type of research carried out in this study is an experimental laboratory study using a post-test only control group design. A total of 45 samples were selected using simple random sampling and then divided into five groups, namely self-curing acrylic resin with the addition of 0.25% durian rind nanocellulose, 0.50%, 0.75%, 1%, and the group without the addition of durian rind nanocellulose. The TEM test was carried out using 0.5 ml of nanocellulose to see the size and shape of the nanocellulose. The SEM test was carried out on samples selected by simple random sampling. The surface roughness test was done using the Surfcorder SE 1700 surface roughness tester. Data analysis was carried out using One-Way ANOVA and then LSD test. The results in this study are whisker-shape nanocellulose with an average length of 181 nm and a width of 16.5 nm. The highest surface roughness was found in treatment group 4 with the addition of 1% nanocellulose at 2.2954 0.3417 m, and the lowest was in the control group at 1.2409 0.3352 m. Based on the results above, it can be said that there is an effect of adding nanocellulose fiber from durian skin (Durio zibethinus Murr.) to the surface roughness of self-curing acrylic resin.

***Keywords**: Durian rind, nanocellulose, orthodontic base plate, self cure acrylic, surface roughness*

***Bibilography**: 2010-2021*